Scrap Metal Recycling in Massachusetts & Air Quality

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Scrap Metal Composed of…

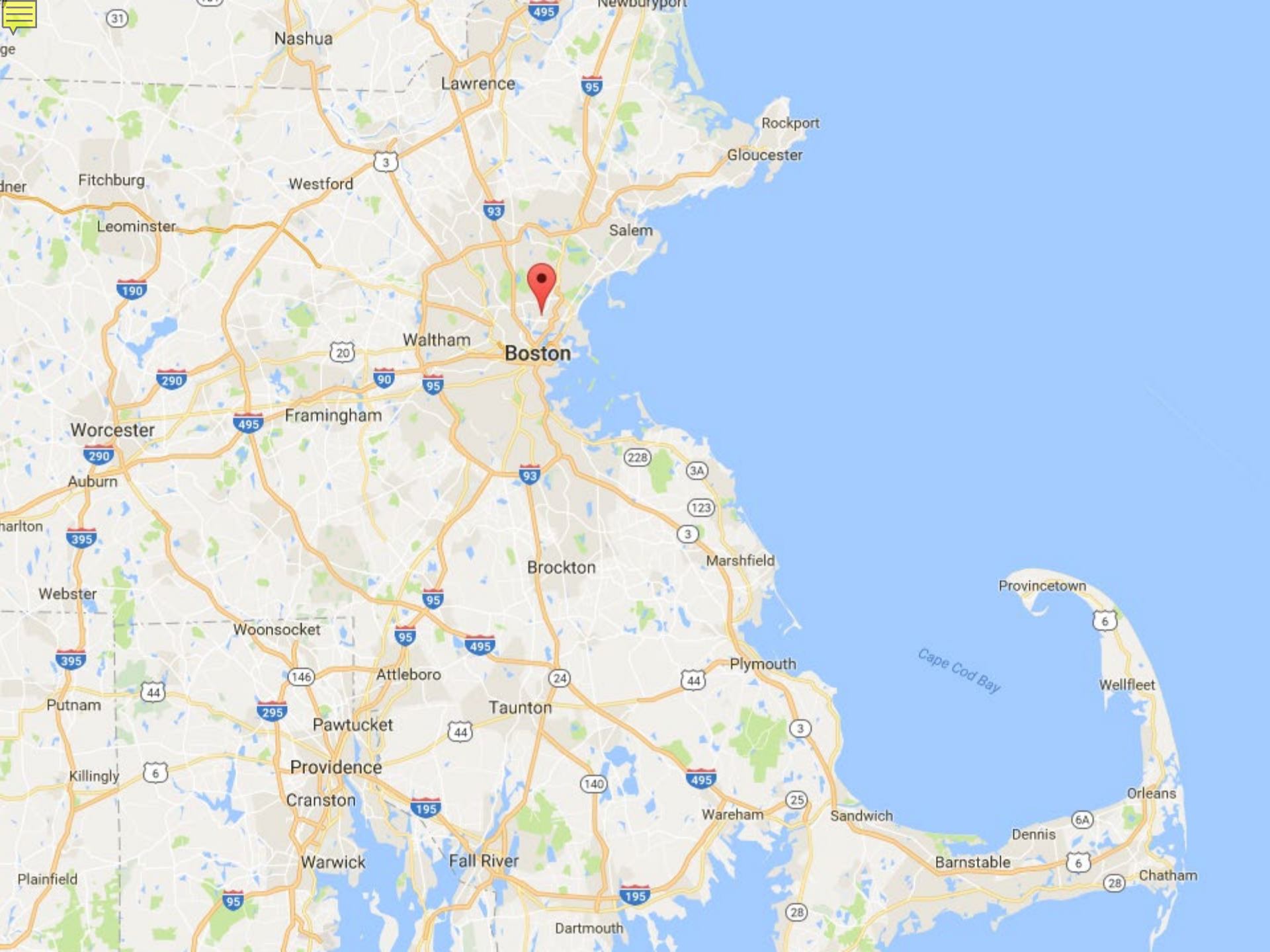
1) metals
    - ferrous
    - non-ferrous
2) non-metals
    - plastic
    - fabric
3) hazardous materials
    - gasoline
    - CFCs

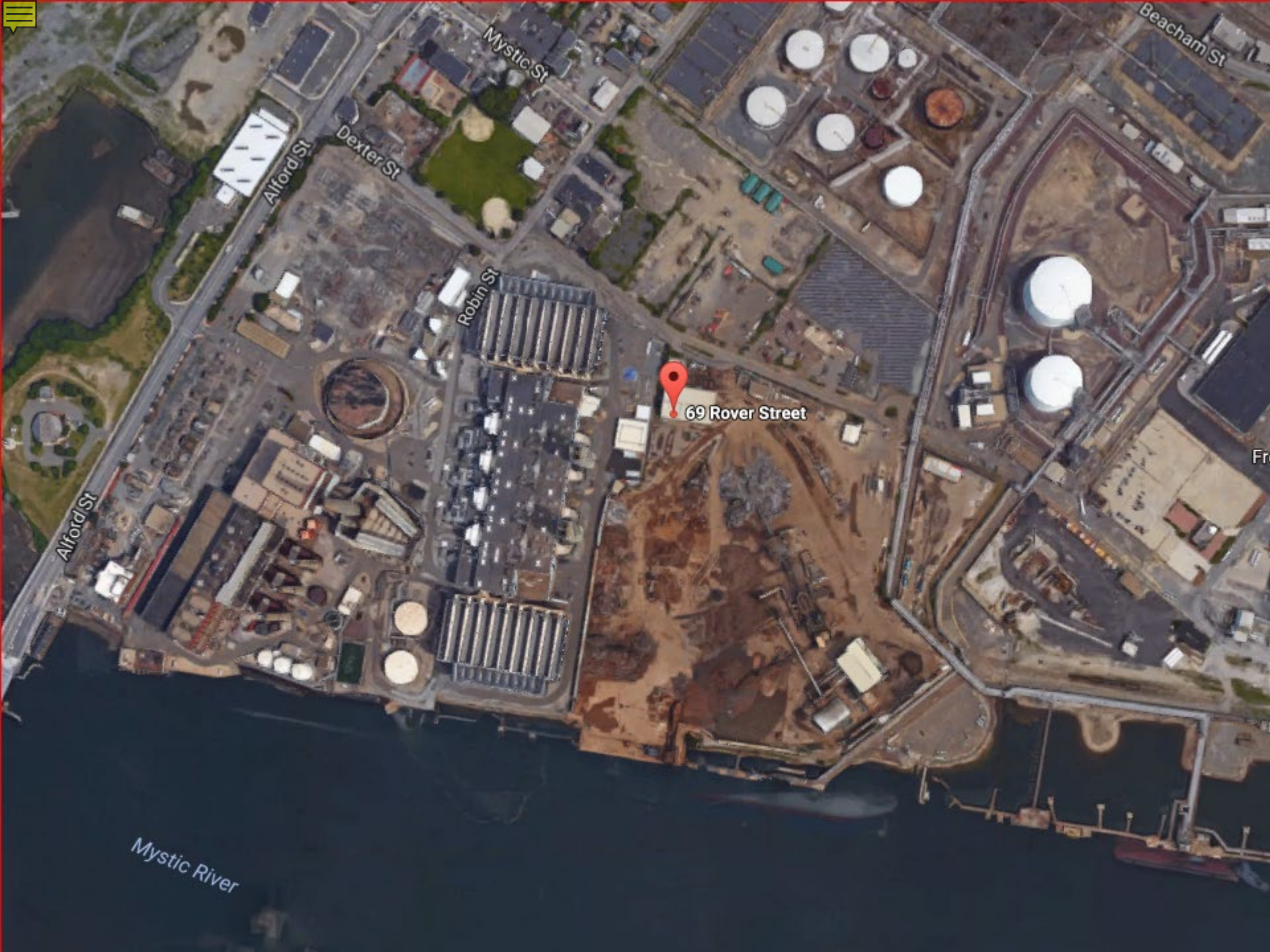
Cross Section of Metal Shredder


LIEBHERR

Case Study

- Prolerized New England (PNE)/Schnitzer
  - Rover Street
  - Everett, MA


Nashua
Lawrence
Newburyport
Rockport
Gloucester
Fitchburg
Westford
Leominster
Salem
Waltham
Boston
Worcester
Framingham
Auburn
Brockton
Marshfield
Webster
Provincetown
Woonsocket
Attleboro
Plymouth
Cape Cod Bay
Wellfleet
Putnam
Taunton
Pawtucket
Providence
Killingly
Cranston
Wareham
Sandwich
Orleans
Dennis
Barnstable
Chatham
Warwick
Fall River
Plainfield
Dartmouth


Mystic St
Beacham St
Alford St
Dexter St
Robin St
69 Rover Street
Alford St
Mystic River

The PNE/Schnitzer Megashredder

Complaint

- Particulate Matter (PM) fall-out
- Adjacent property
- Source of PM determined to be PNE/Schnitzer

- **Complaint Investigation & Site Inspection**
- December 2011: MassDEP Boston - Strike Force
- February 2012: MassDEP NERO Compliance & Enforcement Inspection
  Air Quality & Hazardous Waste

Everett Facility History

- 1966 shredder installed
- 2003 PNE/Schnitzer requests determination if a new, larger shredder needs a permit

- Letter states < 1 ton per year (TPY) for PM
- No other pollutants identified in letter

- The Megashredder never obtained a Permit

Permit Application

- May 2012: PNE submits an application for a proposed process ("Fines Recovery Project")
  - File review (facility reported very low emissions)
  - Site visit
  - Is the facility in compliance with regulations?

Preliminary Best Available Control Technology (BACT) Review

1) Pollutants emitted
2) Emission factors
3) Identification of technologically viable controls/strategies
4) Air pollution control device(s) used in practice
5) Cost

Source Category Review and Investigation

Contacted other regulatory agencies including:

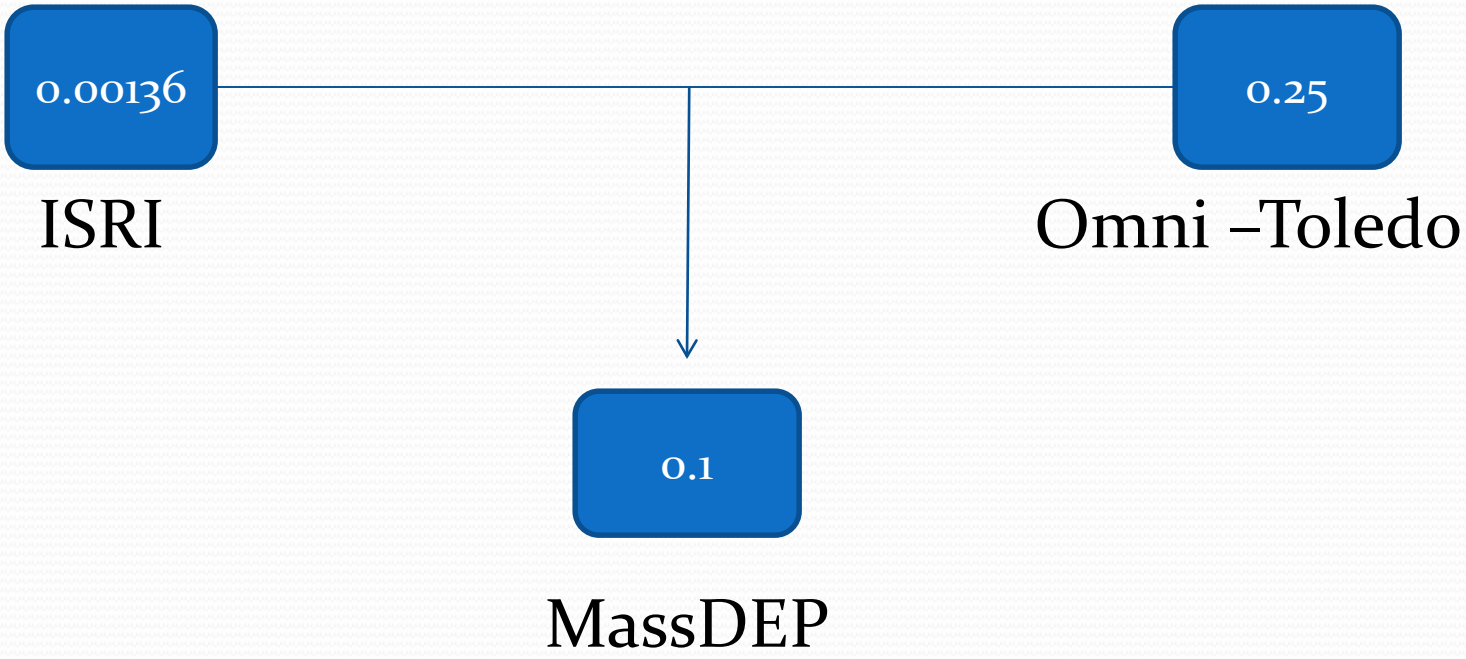
- EPA Region 1
- California Dept. of Toxic Substance Control
- South Coast Air Quality Management District
- OR, MN, RI, FL, NC, WA, OH, IN, WI

VOC Emission Factors

DATE	Where/Owner	EF(lb VOC/tons material processed)	Testing (y/n)	Depolluted? (y/n)
1996	Institute of Scrap Recycling Industries factor "Title V Applicability Workbook"	0.00136	Yes	
1999	Sadoff Iron & Metal, Fond du Lac, WI	0.213	Yes	Gas tank removed
2004	Miller Compressing, Milwaukee, WI	0.0168	yes	Yes
June 2005	Toledo Shredding, Toledo Ohio	0.247	yes	?
Sept 2005	Adams Steel, Anaheim CA	0.0435	yes	?
Feb-Mar 2007	Schnitzer Steel, Oakland CA	0.02	yes	Yes
April 2007	Sims Hugo, Terminal Island, CA	0.2058	yes	?
October 2009	Omni Source, Jackson, MI	0.25	yes	(?) Yes
Dec 2011	Schnitzer Steel, Portland Oregon	0.03	No	
May 2012	Schnitzer/Prolerized LPA Application	0.00136	No	
June 2012	SA Recycling, Terminal Island CA	0.1	yes	

VOC Emission Factor Range

Values given in lb VOC/ton material processed



Emission Factor equals….

Why such a wide range in emission factors for this industry?

- Different materials (percentages) being processed (e.g. % light iron & % vehicles)
- Percent of capture of emissions from the shredder often unknown
- Different sample locations during testing
- Different test methods used
- Different scrap source control programs (“depolluting” of vehicles)

What does “depolluted” mean?

- Subjective term
- Drained vs. un-drained vehicles
- Remove gas tank vs. “spiked” gas tanks
- Currently PNE also removes:
  - air bags
  - batteries
  - lead wheel weights
  - mercury switches
  - drain refrigerants
  - tires

PNE/Schnitzer Potential To Emit

- Megashredder can process 300 tons per hour
- 300 ton/hr x 8760 hr/year = 2,628,000 tons/yr

  - ISRI factor: 1.79 tons VOC/year
  - Oregon factor: 39.4 tons VOC/year
  - **Toledo factor: 324.6 tons VOC/year**
  - **MassDEP factor: 131.4 tons VOC/year**

Enforcement Case Development

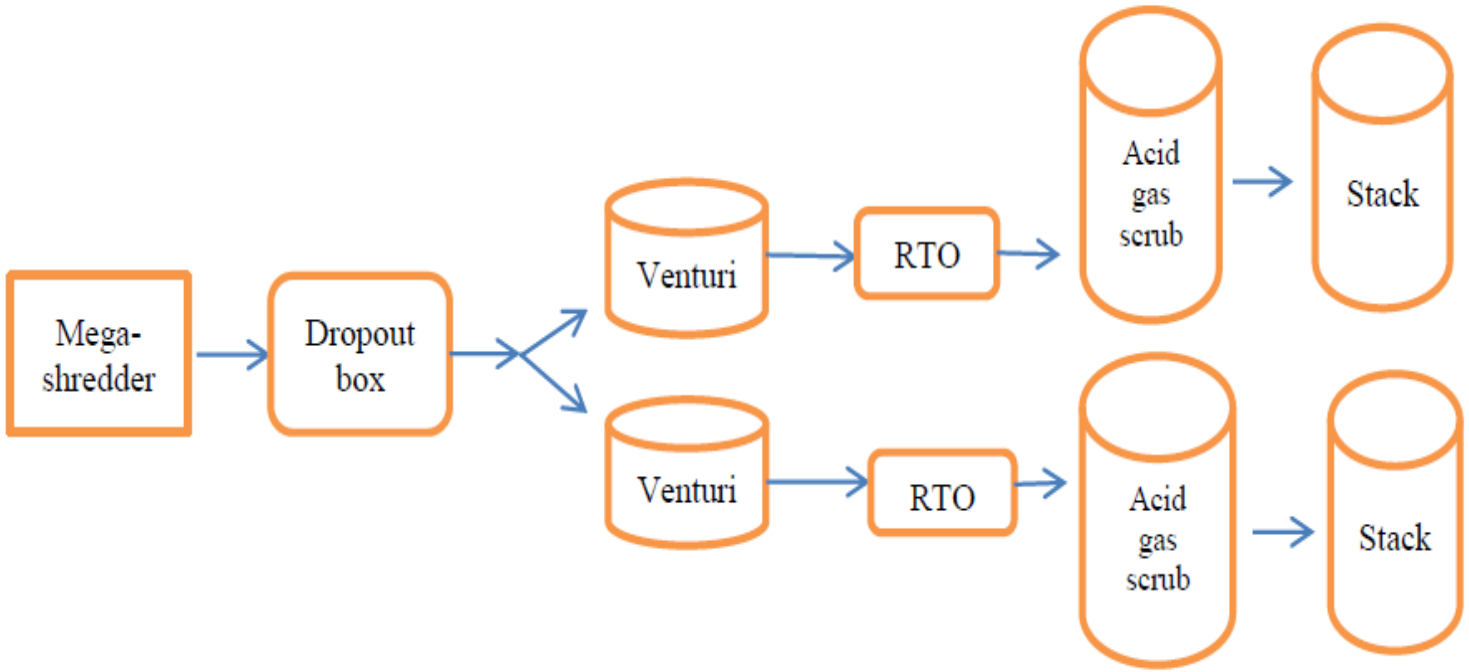
- Air
- Hazardous Waste
  - ASR = auto shredder residue (aka “fluff”)
- Stormwater run-off

The Settlement

- September 2015 – Consent Judgment Signed

1) Penalty $900,000.00
2) Obtain a Plan Approval implementing BACT
   - PM control = 99%
   - VOC control = 98%
   - Acid gas control = 98%
   - Permanent Total Enclosure EPA Method 204 “like”

Proposed Air Pollution Control Train



Monitoring Emissions

- Temporary CEMS to monitor VOCs for 60 days: (meet PS under 40 CFR Part 60, App B & F)
- Temperature monitoring system to continuously monitor operating temp of RTO
- Parametric monitoring of process
- Compliance testing (stack testing) will also be required
  - Prior to commercial operation
  - Every 3 – 5 years

References

- Map Of Everett Massachusetts, viewed 26 April 2017 < https://www.google.com/maps/place/Everett,+MA+02149/@42.1834224,-70.6431599,9z/data=!4m5!3m4!1s0x89e3710a5024b969:0x71187cf872e53c0!8m2!3d42.40843!4d-71.0536625 >
- Map 69 Rover Street, Everett, MA, viewed 3 May 2017 <https://www.google.com/maps/place/69+Rover+St,+Everett,+MA+02149/@42.3902308,-71.0612423,1004m/data=!3m1!1e3!4m5!3m4!1s0x89e3711d6649fa51:0xd5c8b03c6a0d6753!8m2!3d42.391712!4d-71.063359>
- Typical Metal Shredder, viewed 26 April 2017 <https://www.google.com/search?q=pictures+of+mega+shredders&source=lnms&tbm=isch&sa=X&ved=0ahUKEwj2x7zegsPTAhW070MKHTJeAG4Q_AUICygC&biw=1280&bih=958#q=pictures+of+mega+shredders&tbm=isch&tbs=rimg:CUvfKIdYM4yuIjh94_1GsqFKY0DP9BQITrAyZ3WnLJ6Vhz5YOHIxBfywZh2K77K8ce03QzVmKwYh-Lvxzb0c6VJL4qi0SCX3j8ay0UpjQEbpexfeXYbKgKhIJM_10FAhOsDJkRzw7C5axGrWYqEgndacsnpWHPlhFIMlx8J9TX8C0SCQ4cjEF_1LBmHES-pGuEkFa-WKhIJYrvsrxx7TdARTE9VOy3Y5HgqEgnNWYrBiH4u_1BGrhOuVDi4G2y0SCXNvRzpUkviqEXJzfrKFkyKs&imgrc=S980h1gzjK62xM>
- Cross Section of Metal Shredder, Viewed 26 April 2017 <http://www.recyclingtimes.com/partsrequester_clip_image002.jpg>
- Picture of Gerber baby food, viewed 5 May 2017 <https://www.google.com/search?q=4+oz&source=lnms&tbm=isch&sa=X&ved=0ahUKEwiX7fm27tjTAhUL9IMKHQtkCcgQ_AUIBigB&biw=1280&bih=958#tbm=isch&q=4+oz+baby+food+jars&imgrc=cGP51ZUmwenceM:>

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